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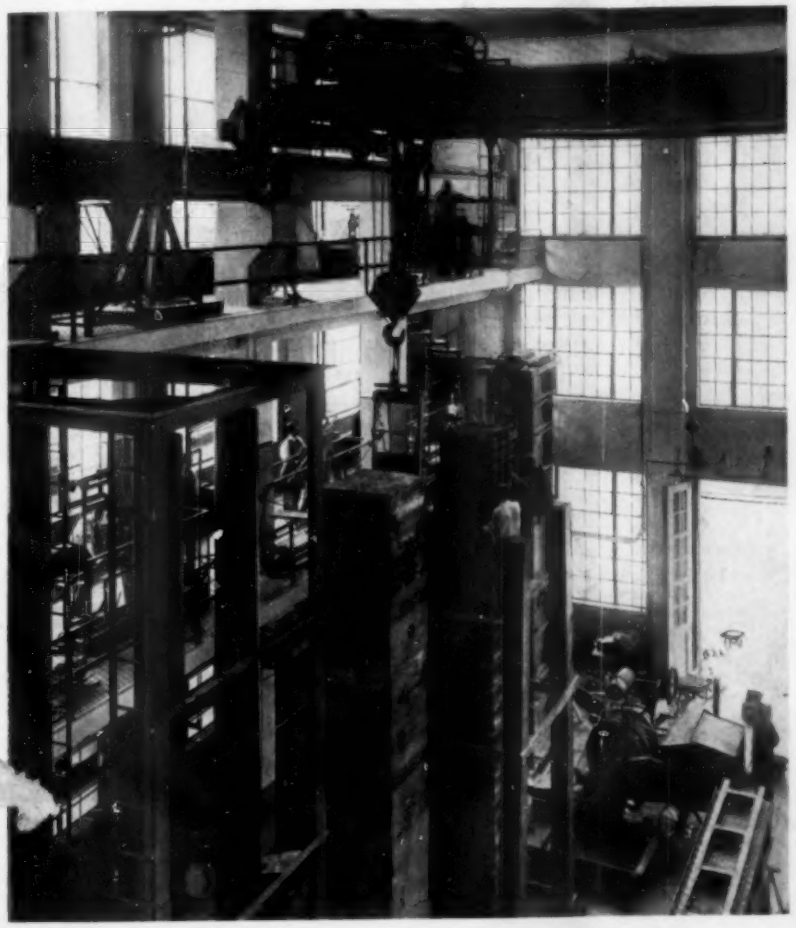
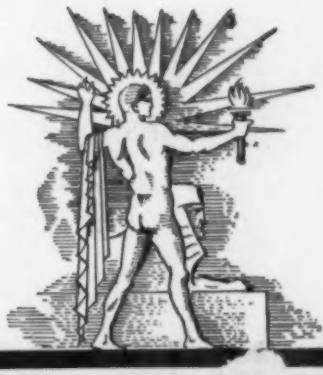
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •





OCTOBER 3, 1936

Testing Strength

See Page 217

A SCIENCE SERVICE PUBLICATION

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DO YOU KNOW?

Popularity of automobile trailers has called attention to the need for a standard coupling design to link trailers with any make of car.

The National Bureau of Standards is studying the conditions of wear in shoes, with a view to developing standards for women's leather shoes.

Russian gold production, increasing rapidly, will outstrip Transvaal gold output in three or four years, one Soviet official predicts.

Chemists find that if dye is to give a fast color to cotton, the dye particles must be smaller than one seven-millionth of an inch in diameter.

Before white men came to America, Aztec Indians in Mexico had a native religion with such institutions as convents, monasteries, a hierarchy of priests, and the rite of confession.

Horseshoes worn by racing horses are as light as five ounces, in contrast to shoes worn by draft horses, which may weigh six times that much.

The German shoe industry is struggling with a leather shortage, and is using fabric, rubber, and other materials to replace leather when possible.

Chameleons take on their most rapid changes in color, not to match surroundings, but in expressing their fear or rage.

To extract tree seed from cones, the cones are sometimes heated in kilns, but the method requires special care to avoid overheating the seed.

The modern feminine device of keeping a hat on with a band at the back was used by men of Athens, fourth century B.C.

Italy is getting various by-products from tobacco, including an edible oil, an industrial oil, stock feeds from tobacco seed, and paper from tobacco stalks.

Japanese government scientists are believed to be on the track of the valuable secret of how to produce salt directly from sea brine for commercial use.

WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.

ARCHAEOLOGY

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When was a town near the city of Washington a fashion center for the new world? p. 213.

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Could wax in the ear cause an apparent suicide? p. 212.

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PSYCHOLOGY

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SEISMOLOGY

Does the seismograph record hurricanes? p. 211.

SURGERY

How can weak patients be built up for an operation? p. 213.

How does the surgeon operate on the eye for glaucoma? p. 212.

ZOOLOGY

What animal is more dangerous to hunt than the tiger? p. 216.

PSYCHIATRY

New Hope Now for Those With Most Common Mental Disease

Insulin, Reducing Blood Sugar to Minimum, Reported To Provide Cure For 68 Per Cent of Cases Treated

HOPE that insulin, life-saving remedy in diabetes, will restore to sanity thousands of patients now languishing hopelessly in mental disease hospitals, appears in a report of European observations made by Dr. Bernard Glueck, medical director of Stony Lodge, Ossining, N. Y.

Insulin is being used with apparent success in European hospitals to treat schizophrenia, Dr. Glueck reports (*Journal, American Medical Association,* Sept. 26).

This mental disease fills one-fifth of all hospital beds, more than any other single disease, and its cost has been estimated at one million dollars daily.

Great Achievement

By giving daily doses of insulin, the sugar content of the patient's blood is reduced to its lowest possible limit short of endangering life. Of 118 patients treated in Switzerland by this method, 68.2 per cent, over two-thirds, made full recoveries. If these patients remain permanently sane, this method of treating mental disease will constitute, in Dr. Glueck's words, "one of the greatest achievements of medicine."

No other form of psychiatric therapy requires as much care, skill and caution in its application as this treatment does, it is said. The greatest difficulty lies in the total unpredictability of the patients' reactions from day to day or even from hour to hour. The introduction of sugar into the blood, however, has almost instantaneous restorative effects if life is threatened by too much insulin, Dr. Glueck states.

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SEISMOLOGY

Earthquake's Record Lost In Hurricane Disturbance

THE great hurricane that swept up the Atlantic coast during the middle week of September helped an earthquake to get lost. Great storms like this cause the indicator-beams on seismographs to dance in small rhythmic tremors known as microseisms. These "wiggles," dancing during the storm period, completely confused and masked out the record of a real earthquake that came in from some distant part of the earth, on Friday, Sept. 18, at the Franklin Institute, as shown in the illustration. The straight lines at the right show the record usually traced by the instrument when nothing is happening. Records at Fordham, St. Louis, and Georgetown Universities were also badly disturbed by microseisms. How a storm acts in causing these microseisms is not yet known. At one time, the breaking of heavy surf was considered the cause. This idea has been given up, without a better theory being substituted.

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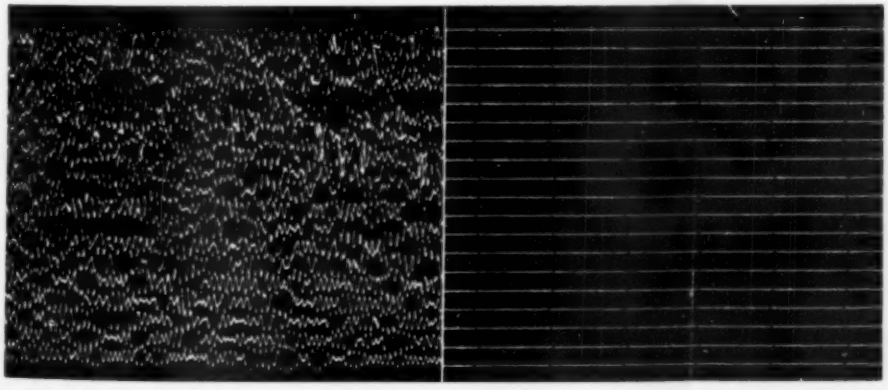

RECORD HIDDEN

The seismograph record at the left contains the traces made by an earthquake, but they are masked by gyrations caused by a hurricane. At the right are the instrument's tracings when not disturbed.

ETHNOLOGY

Natives of West Indies Used Hurricane Amulets

ARAWAK Indians of the West Indies, from whom white men first learned the name that has since become "hurricane," had a special god for this fearsome kind of storm, and carried images of him as protective amulets, Herbert L. Krieger of the Smithsonian Institution informed Science Service.

The little images carried by the Indians were known as "zemi." There was a particular zemi for each type of thing to be feared—battle, murder, and sudden death. It is significant, Mr. Krieger stated, that the hurricane rated a special zemi of its own.

Mr. Krieger has a whole trayful of these Arawak zemi, ranging from the size of a thimble to a few inches in length and skillfully carved in wood, shell, bone, and stone. They are tiny effigies of human beings and various animals, such as frogs, bats, and jaguars. But it is no longer known which of these zemi was assigned to the hurricane insurance business.

The hurricane might have borne the even more sinister title of "furycane," but for a more or less chance shifting of spellings, back in the sixteenth century.

The first white men to encounter West Indian storms of this type were Columbus and his companions, who had one of their ships destroyed and the others endangered by such a tempest. They, and other discoverers who followed in their wake, learned the native name, which was reported as "huracan" by some writers, and as "furacan" by others.

Both forms came into European use in a great variety of spellings, including such odd variants as "hero-cane" and "harry-cain." But by the beginning of the seventeenth century, only the spellings beginning with "H" survived; English had lost its chance to know the most destructive of all storms by a descriptively suggestive title.

Shakespeare evidently was much impressed by voyagers' tales of terrible storms in the New World's waters, for one of his plays, "The Tempest," is conditioned upon storm and shipwreck, and he uses the word "hurricano" in "King Lear" and "Cymbeline."

Science News Letter, October 3, 1936

MEDICINE

Rare Diseases Are Discussed At Meeting of Specialists

New Treatments for Ailments of the Eye, Ear, Nose And Throat Reported at Annual Gathering in New York

LAST week was examination time for doctors who want to specialize in treating eye, ear, nose and throat diseases.

Hundreds of physicians from all over the United States and Canada, already graduated from medical school and many of them with years of practicing behind them, were quizzed at the Vanderbilt Clinic, Medical Center, in New York City. If they passed, they will be awarded certificates by the American Boards for Ophthalmology and Otolaryngology and will be eligible for membership in the American Academy of Ophthalmology and Otolaryngology.

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PHYSIOLOGY

Dizziness May Be Cause Of Apparent Suicide

DEATH from falling out of a window or in front of a speeding automobile may have every appearance of suicide and yet be really due to sudden dizziness caused by such a trifling condition as an accumulation of wax in the ear canal.

Such a possibility was pointed out by Dr. Marvin F. Jones to the American Academy of Ophthalmology and Otolaryngology meeting in New York last week.

Dizziness may also be a sign of some serious ailment such as a brain tumor or of bleeding within the complex internal ear mechanism, Dr. Jones said. This indicates the need for close cooperation between ear-nose-throat specialists and neurologists.

Many serious brain ailments first show up as ear or nose disorders of more or less serious nature. Pain in the face, for example, makes people think of sinus trouble, but it may be the symptom of serious neuralgia. Loss of speech may be stage fright or it may be due to paralysis of the vocal cords or to aphasia. Disease of the ear, such as mastoid disease, on the other hand, may lead to disease of the brain.

Reversing the picture, Dr. Donald J. Lyle of Cincinnati reported diseases of the brain that may affect the eye. Inflammation of the brain itself, called encephalitis and commonly known as sleeping sickness, shows many eye symptoms. Inflammation of the covering of the brain, meningitis, often affects the nerves which pass through this covering to the eyes and causes eye symptoms. Syphilis of the nervous system and brain often causes blindness and impairs the eye muscles.

Science News Letter, October 3, 1936

MEDICINE

Meningitis May Harm Eyes By Paralyzing Muscles

MENINGITIS may affect the eyes by partially paralyzing the eye muscles or by causing defects in vision as a result of scars left by severe inflammation at the base of the brain. Cases in which this had occurred were reported by Dr. Parker Heath of Detroit. Dr. Heath examined the eyes in two hundred persons who had suffered from meningitis in an epidemic three years previously.

Studies of monkeys showed that when these animals recovered from meningitis they did not suffer paralysis of the eye muscles, but their eye nerves at the base of the brain were covered with a thick discharge.

Science News Letter, October 3, 1936

MEDICINE

Eyes May Be Affected By Meningitis and Arthritis

POSSIBILITY of arthritis, the rheumatism of a generation ago, affecting the eyes appears in an unusual case reported by Dr. Frederick A. Kiehle of Portland, Ore.

Dr. Kiehle's patient was a sixty-year-old woman who had been bedridden for nine years with deforming arthritis. Both this patient's eyes showed a softening and thinning of the sclera. This is the tough coat of the eye-ball which helps to keep it in its rounded shape. Dr. Kiehle feels there is some relation between the eye condition and the arthritis. He cited reports of similar cases and urged physicians to investigate the possibility further.

Science News Letter, October 3, 1936

SURGERY

New Operation Saves Eyes Threatened by Glaucoma

A NEW operation which promises to save many eyes afflicted with glaucoma was described by Dr. Otto Barkan of San Francisco at the same meeting of the American Academy of Ophthalmology and Otolaryngology.

In this serious eye ailment there is increased pressure in the eyeball due chiefly to a blocking of the channels which allow for the escape of fluid from the eye back into the circulation. Dr. Barkan has perfected a method of locating the point of blockage.

With a special lens fitted over the patient's eye and a microscopic arrangement, magnifying forty times, for both his own eyes, the surgeon is able to get a direct view of the field of operation. With a very delicate knife he then frees the clogged area at the base of the iris.

The procedure is so new that it has not been used yet on many cases, but Dr. Barkan feels that it is greatly superior to other operations for this condition.

Science News Letter, October 3, 1936

MEDICINE

Rare Disease of Cornea Produces Opaque Nodules

A CASE of a rare disease of the cornea of the eye which interferes with vision was reported by Dr. Benjamin Rones of Washington, D. C. The cornea is a structure which fits over the iris of the eye like a watch crystal, and which must be transparent or the eye has no vision. In the case Dr. Rones reported, small opaque spots or nodules appeared on the cornea, interfering with its transparency. Sometimes instead of occurring as nodules, these spots streak across the cornea in the form of a lattice. The cause of the condition is unknown and nothing can be done to remedy it. The condition is usually not progressive and the amount of vision the patient has depends on where the nodules or lattice appear on the cornea. Dr. Rones believes the condition often runs in families and that it is due to a general disturbance of body processes rather than to any local condition within the eye.

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SURGERY

Blood Transfusion Called Best Pre-Operation Tonic

HUMAN blood, accurately typed and carefully injected into the veins by competent surgeons, is the best possible tonic for a number of conditions, Dr. John J. Shea of Memphis told the meeting.

Among the conditions for which he advised it are: before operation on weakened patients; loss of blood by accident or by slow seeping away; destruction of blood by infection, as mastoid disease; and diseases of the blood itself such as hemophilia, the hereditary bleeders' disease, and purpura hemorrhagica.

Blood transfusion is also valuable, he said, for giving a temporary supply of missing white blood cells in agranulocytic angina.

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MEDICINE

Electrochemical Treatment Criticized by Physician

ELECTRICITY and chemicals may dry up the running noses and stop the sneezes of hayfever and give the patient relief but such treatment is fraught with danger, Dr. Lee W. Dean of St. Louis warned.

Dangerous dryness and scarring is the payment for such treatment, Dr. Dean said, and the relief obtained is not lasting. The electrochemical treatments accomplish their results by destroying the mucous lining of the nose and the nerves which cause sneezing and swelling when irritated by pollens. The next year after treatment, however, the symptoms may return after the nerves have grown back.

Dr. Dean advises careful search for the causes of nose sensitiveness and removal of as many of them as possible, before resorting to electrical, chemical or serum treatment.

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ARCHAEOLOGY

Find Indian Town's Graveyard In National Capital Suburb

A STEAMSHOVEL burrowing up earth at an Army flying field in suburban Washington has struck the lost graveyard of the old Indian town of Nacotchtank.

This is the belief of archaeologists at the Smithsonian Institution, who are now studying the bundles of bones found arranged in an old Indian fashion. The custom, common among southern Algonquian Indians, was to collect a bundle of skulls, another bundle of leg bones, and so on, and to pile sorted types into graves. Several barrels full of the bones have so far been recovered.

The discovery adds to knowledge of an historic Indian town picturesquely described by Captain John Smith. An artist who accompanied Smith drew pictures of typical towns in the region, thus recording the early appearance of what was destined to be the capital of the United States.

Several Indian villages stood within the District of Columbia area, but Nacotchtank was the greatest. It has been described as an important trading town, and a sort of fashion center. The town's place in Indian fashion trade is inferred from the fact that chief exports were powdered graphite and ocher, which served as face and body paints to adorn Indians of Maryland and Virginia.

The suburb Anacostia, which stands today on this Indian ground, bears the old Indian name Nacotchtank, in a Latinized form.

This corner of the District of Columbia as it appeared to Captain John Smith in 1608 consisted of houses of bent poles covered with mats, rather like hayricks in general shape. The houses were arranged with some regularity and surrounded by cornfields. The Indian men wore robes, the women wore short skirts, and the children very little of anything. The Potomac River was a busy thoroughfare of Indian canoes bent on trading ventures, and out from the villages at Washington radiated land trails to the Susquehanna River and on westward.

Within 75 years after Smith's visit there was not an Indian left in the Potomac Valley.

While Washington residents have made frequent discoveries of Indian implements and small objects, from this early stage of the city's history, the knowledge of Algonquian tribes along the Atlantic coast is considered meager. Finding a graveyard of early inhabitants of the National Capital is giving scientists a new opportunity to study these Indian types.

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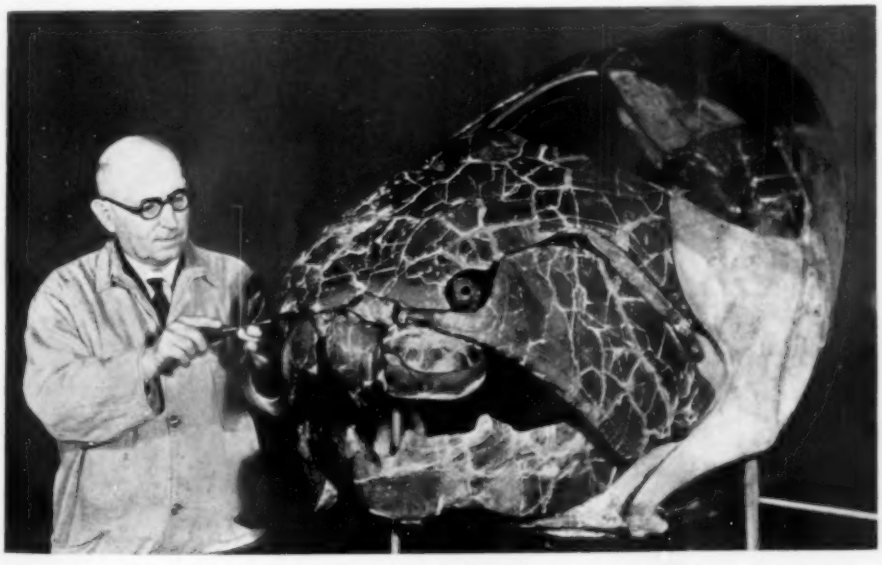

A BIG ONE

Izaak Waltons of the Devonian epoch of 300,000,000 years ago may have had some real fishing near what is now Cleveland, Ohio. Shown above is the immense head of the Dinichthys terrelli which is 55 inches long, 40 inches high and 36½ inches wide. Total length of the fish is estimated at 30 feet. The front part of the skull is hinged to the shoulder girdle so that the fish could operate his face like a marine steam shovel. Above is Peter A. Bungart of the Cleveland Museum of Natural History who collected the skull 13 miles from Cleveland and mounted it for exhibition.

ASTRONOMY

New Star Bursts Forth In Constellation of the Eagle

Aquila, Setting For Famous 1918 Nova, Scene of New Eighth Magnitude Star High in Southwest Near Altair

A NEW star or nova has burst forth in the constellation of Aquila, the Eagle, the International Astronomical Union's central bureau at the University of Copenhagen has been informed by Nils Tamm at the Kvistaberg Private Observatory in Bro, Sweden.

The new Nova Aquilae is now of the eighth magnitude and not visible to the naked eye. News of its discovery was cabled to observatories of the world.

The brightening of this star takes on added interest because the most famous nova of this century, Nova Aquilae of 1918, was in the same constellation.

The nova is high in the southwestern evening heavens, not far from Altair, seventh brightest star seen from this part of the earth.

The brightening of a star signals a gigantic outburst which if it had occurred to the sun would have immediately wiped out the earth and other planets. One or more expanding shells of gas rush away from a nova at immense speeds. Nova Lacertae rose in June of this year to be as bright as the Pole Star, and Nova Herculis discovered in December, 1934, was even brighter (See *SNL*, Dec. 29, 1934, and June 27, 1936).

The nova in Aquila was photographed on the night of September 20 by Harvard Observatory, and evidence that the star is expanding was discovered. On photographic plates, Nova Aquilae was of the twelfth magnitude on June 22, about tenth magnitude on July 22 and about ninth magnitude on Aug. 17.

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ASTRONOMY

New Comet Discovered In South Africa

A NEW comet was discovered in the constellation of Aquarius in the southern evening sky on Sept. 20 at the Union Observatory, Johannesburg, South Africa, by Dr. Cyril Jackson.

It is faint and diffuse with no nucleus. Astronomers rate it as twelfth magnitude. News of its discovery was cabled to observatories by the International Astronomical Union's bureau at the University of Copenhagen.

Whether Jackson comet will grow brighter can be determined only when more and later observations are made so that an orbit can be computed.

The astronomical position of the new comet is approximately right ascension 23 hours and south declination 12 degrees 47 minutes.

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ASTRONOMY

First Photographs Taken On Mount Palomar

TO Dr. Fritz Zwicky, associate professor of theoretical physics at California Institute of Technology, goes the distinction of making the first astronomical photographs at the Astrophysical Observatory, the future home of the great 200-inch telescope.

Working with a Schmidt-type camera, a small auxiliary observing unit for the future world's largest astronomical eye, Dr. Zwicky is taking focus photographs of the sky to be used in adjusting the mechanisms of the larger instruments yet to be installed. A month will be required for this work.

A battery of trucks has started to haul from Los Angeles the 500 tons of steel for the side walls of the 200-inch dome. First ten loads of the six trucks and five trailers will be equipment for swinging the steel into place.

So steep is the road up the mountain that the filled trailers are left at the foot while the trucks go up alone. When empty, they return and haul up the trailers.

Grinding of the great 200-inch disk has been started at California Institute of Technology in Pasadena. Three months will be required to give it a flat surface, first. Then the disk will be turned over and another six months spent in grinding the back. Only then will the long, delicate and tedious job of grinding the face to the proper curvature be undertaken.

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FROM SILVER DUST

Tiny particles you cannot see produce this visible picture. The enlargements on the facing page show you how it is done.

PHOTOGRAPHY

Silver You Cannot See Makes Images You Can

EVERY time you take a snapshot on your camera at home billions of things happen. Why? Because billions of tiny crystals of light-sensitive silver bromide on the gelatin surface of the film in your camera change when the light strikes them. Those little crystals are embedded in a gelatin layer, like fruit in some of the popular gelatin desserts on the family table.

Developing the film, as it is called, changes the particles struck by the light rays into black metallic silver. It is the gradation from pure black, through the various shades of grays to pure white which produces the shade tones of the final printed picture.

Take a microscope, however, and go into the Lilliputian land of the silver grains you cannot see but which make the images that you can, and there you will find that truly the myriad host of particles is present.

The accompanying pictures, showing successive enlargement and magnification which prove the truth of this statement, are from scientists of the Eastman Kodak Company. The first picture (shown above) shows the young lady as you normally see her on a photographic print, except that the picture is taken from a positive motion picture film. In the second view she takes on something of her photographic granular structure which seems like a good case of freckles in the summer time.

But keep watching her left eye as in the third picture. Yes, the shadow of the

eyebrows and the iris of the eye itself are really made of the black grains of silver.

The tiny white highlight on the eye is bright because only a few grains of silver-bromide crystals at that point changed to silver in the developing. Dark regions exist where more crystals changed.

Just as you watched the eye in picture three, concentrate on the eye highlight in the last picture. There it is. The bright area in the center of the picture and the multitude of silver grains all around it are now completely apparent. Instead of a photograph you might well think you are looking at a sprinkling of coal dust instead.

Actually, of course, one could obtain the whole original picture by the supertask of laying down at just the right place tiny microscopic specks of dust; many of them where you wanted black and few for white areas. The job is naturally almost a physical impossibility yet one brief exposure to light for only a fraction of a second accomplishes the same thing. How big are the silver-bromide particles that do this superhuman job? Some of them are so small that only the most powerful microscopes will show them. Others loom large under a microscope and may be as big as one six-thousandth of an inch across!

For some of the extra fast supersensitive films for use in the new candid camera, the grain size is still smaller so that more enlargement will be permissible before the grain structure is noticeable.

In positive film for projecting motion pictures where the enlargement is even greater the grain size is much less than one twenty-thousandth of an inch.

Anywhere from half a billion to five billion particles are embedded in the gelatin on a square inch of surface.

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CHEMISTRY

Through Special Technique Enzyme Is Viewed at Work

Action of Catalase Is Observed for First Time and Confirmation Obtained That It Actually Enters Reactions

FOR THE first time in the history of physiological chemistry, an enzyme, one of those chemical substances important in the processes of digestion and fermentation, has actually been observed at work, and experimental proof has been provided for the theory that enzymes enter into chemical reactions, as well as stimulate them. This has been accomplished by Dr. Kurt G. Stern, Visiting Lecturer in Physiological Chemistry at Yale University, who, by a special technique that seems equivalent to slow motion photography, caught the enzyme at its lightning-swift work.

Used Colored Enzyme

The enzyme which opened the door for scientists to a new approach in the study of digestion was catalase, selected because it is the only colored enzyme found in sufficient quantities for experimental purposes and therefore amenable to spectroscopic study. Other enzymes are either colorless or found in minute quantities, but catalase is found in all living cells. The liver cells are especially rich in the substance.

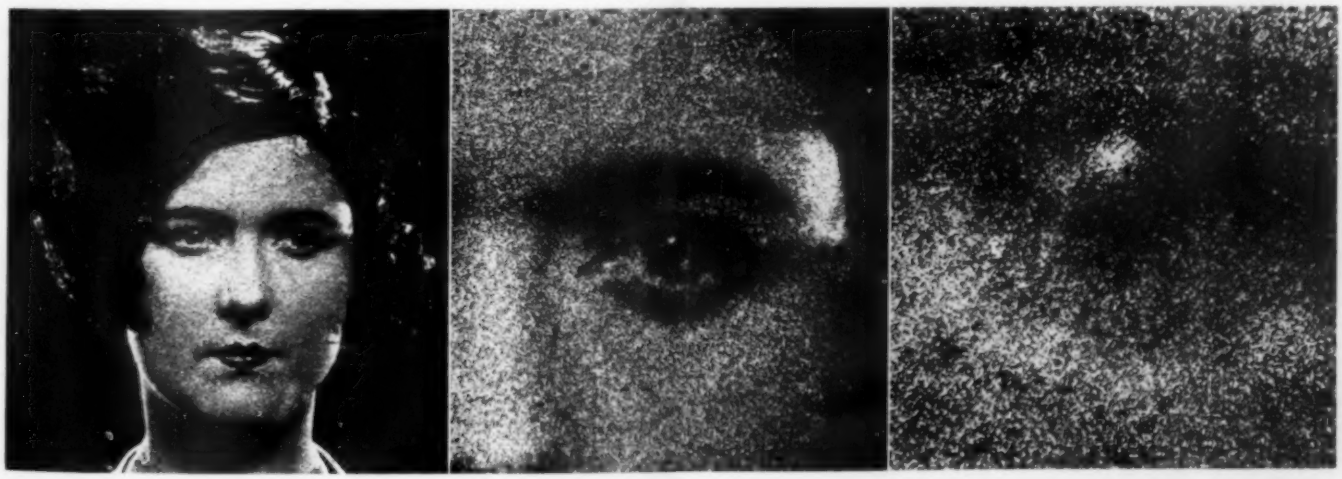
Dr. Stern's first research work on this enzyme was to isolate it and determine its constitution. It was known that it is composed of a colorless protein and a pigment which gives it its color. This pigment, separated from the protein, was purified to a crystalline form and found to be identical with the pigment, or hemin group, of the blood which gets its color from hemoglobin. He was able to transform this enzyme into hemoglobin, by merely exchanging the protein of the enzyme for the globin or protein of the blood pigment, thereby showing the identity of the two hemins.

The exact function of catalase has not been determined, and until recently it was generally assumed that its only function was to break down hydrogen peroxide into water and gaseous oxygen. Since hydrogen peroxide could not be found in the tissues of higher animals and plants, Dr. Stern looked for other substances which might be attacked by this enzyme and thereby provide a clue to its real function. He found that a substance derived from hydrogen peroxide, monoethyl hydrogen peroxide, is also attacked by the enzyme but is broken down much more slowly than the simple hydrogen peroxide.

Monoethyl hydrogen peroxide, when attacked by catalase, does not yield a gaseous product but breaks down into acetaldehyde and (*Turn to page* 222)

LITTLE GRAINS

Like fruit in the gelatin dessert, microscopic specks of light sensitive metal imbedded in the gelatin layer of film make possible the light and shade of the photograph. From left to right are successive stages of enlargement of the view shown on the facing page.



BIOLOGY

Living Organisms Found in Waters of the Dead Sea

LIVING organisms have been found in Dead Sea water, which has always been supposed to be utterly devoid of life of any kind because of its exceedingly high concentration of salt, potash, and other mineral matter. The discovery was made by Dr. B. Wilkansky of the Hebrew University of Jerusalem.

Dr. Wilkansky collected samples of water in the Dead Sea, at various depths to 22 feet. After suitable laboratory preparation, three microscopic forms of life were found: one consisting of yeast-like cells, one of short, rod-like cells, and the third in the shape of long, fine threads.

A brief account of the discovery has been sent to the British science journal, *Nature* (Sept. 12). Investigations are being continued.

Science News Letter, October 3, 1936

ANTHROPOLOGY

Man's Great-Uncle's Bones Found In An African Cave

FRAGMENTS of bone from a South African cave, described by Dr. R. Broom of the Transvaal Museum, may prove to be some of the most significant fossils thus far turned up by science in its long search for facts bearing on the natural origin of man. For sketches of these bits of bone, sent by their discoverer to Dr. William K. Gregory of the American Museum of Natural History, "suggest the right characters for the adult of Australopithecus or a nearly allied form."

Australopithecus, or "the Ape of the South," was first found in 1925 at Taungs in Bechuanaland, by Prof. Raymond A. Dart of the Witwatersrand University, Johannesburg. The two fossils then discovered, a brain-cast and part of the bones of the face, were definitely those of an ape, but of an ape with more man-like characters than any previously known subhuman species, living or fossil. Australopithecus was apparently a real missing link.

Prof. Dart's specimens were those of a young animal, just cutting its first permanent molar teeth. It was therefore of less value scientifically than an adult animal might have been, because young apes and human children are always more alike than the adult forms become. Scientists therefore went on hopefully hunting for fossils that would tell the story of what Australopithecus looked like after he had grown up.

By an especial stroke of good fortune, the newly discovered material described by Dr. Broom also includes a brain-cast, so that a direct comparison with the juvenile brain-cast of the earlier find can be made, and comparisons with the brains of human beings and the brains of apes will also be possible. With this very important cast were also parts of the skull base and a fragment of the upper jaw, both important in giving some idea of the shape of the animal's head and of the appearance of at least the lower part of its face.

The age of the formation in which the fossils were found may be pliocene, that is, the time just before the beginning of the world's latest great Ice Age, more than a million years ago. Since man's ancestry had already been well separated from the ape stock by the late pliocene at least (and indeed man may have definitely appeared by then) it is not considered probable that Australopithecus was a direct ancestor. He must be looked upon as a collateral relative—a great-uncle rather than a grandfather. But he appears to have been a more nearly related great-uncle than any other great ape yet found perching near the main trunk of the human family tree.

Science News Letter, October 3, 1936

ARCHAEOLOGY

To Explore Prison of Richard the Lion-Hearted

THE castle where King Richard the Lion-Hearted was imprisoned when he returned from crusading in the Holy Land, now only an imposing ruin, is to be excavated and restored as a part of an extensive project for the investigation of some of the historic castle ruins in the Rhenish Palatinate, undertaken by the German state of Bavaria.

This castle, still known by its ancient name of Trifels, came into possession of the German emperor, Heinrich IV, in the year 1081. During the reign of Heinrich VI it was rebuilt and extended; it was in this renovated castle that the famous English king was imprisoned, along with many Sicilian nobles.

From 1126 until about 1300, Trifels was the treasure house of the Imperial insignia. Here reposed the Emperor's crown, scepter, orb, imperial sword, ceremonial sword, and all the other bejeweled badges of office and power. Restoration plans include the rebuilding of the castle chapel, in which replicas of the ancient imperial insignia will be kept in state.

Science News Letter, October 3, 1936

IN SCIE

ZOOLOGY

Cape Buffalo Specimens Gathered for Philadelphia

SPECIMENS of the Cape buffalo, reputed to be even more dangerous to hunt than tiger or gorilla, have been secured for the Philadelphia Academy of Natural Sciences by R. R. M. Carpenter of Wilmington, Del., who has just returned from South Africa. To enable museum artists to construct a really accurate background for the mounted group, Mr. Carpenter and his party also collected specimens of the vegetation, stones, and even cans of earth, and made many careful sketches and copious notes and measurements.

Mr. Carpenter was not particularly looking for thrills when he went on his scientific buffalo hunt, but he got them just the same. On one occasion a herd of 80 charged first him and then Mrs. Carpenter, who was making motion pictures atop a hunting car at a little distance. Fortunately, both times the animals stopped before their charge went home. At another time, a herd stampeded past the inadequately sheltered hunter-scientist, so close that he could have touched some of the animals with his outstretched hand.

Science News Letter, October 3, 1936

BIOGRAPHY

Dr. T. H. Morgan Honored by University

DR. THOMAS HUNT MORGAN, one of America's most noted living biologists, Noble Prizeman in 1933, was honored by his Alma Mater, the University of Kentucky, in an all-day program on the occasion of his seventieth birthday. The events included a general convocation at the university in the morning, the placing of a bronze plaque at his birthplace in the afternoon, and an evening banquet of the Society of Sigma Xi, national honor organization for scientists.

The principal speakers were Dean Fernandus Payne of the Indiana University graduate school and President Frank L. McVey of the University of Kentucky. Dean Payne is a former pupil of Dr. Morgan.

Science News Letter, October 3, 1936

EE FIELDS

ENGINEERING

Steel and Concrete Hold 8,000,000-Pound Load

See Front Cover

GIANT 24-foot long columns of steel and concrete have been tested at the National Bureau of Standards with equipment capable of exerting a maximum load of 10,000,000 pounds. As much as 8,314,000-pounds load was exerted on the concrete-incased steel columns while only 5,853,000 was applied to similar steel columns alone.

The increase in the average of the final maximum load, due to the concrete, was 42 per cent, report scientists Dr. A. H. Stang, H. L. Whittemore and D. E. Parsons of the Bureau. On the front cover is shown one column already incased in concrete and workmen building the mold for incasing a second column.

Science News Letter, October 3, 1936

BIOCHEMISTRY

Blood-Clotting Material Gotten From Blood Plasma

A BROWN-GRAY, shapeless mass of solid material obtained from blood by two Harvard University scientists, Drs. Arthur J. Patek, Jr., and F. H. L. Taylor, may hold the key to the solution of the problem of hemophilia. This is the hereditary bleeders' disease which threatens the life of the Count of Covadonga, one-time heir to the throne of war-torn republican Spain.

This brown-gray stuff when suspended in a solution of ordinary salt in a test tube, effectively hastens the clotting time of hemophilic blood, the scientists report (*Science*, Sept. 18). The ever-present danger to a person suffering from hemophilia is the fact that his blood clots so slowly he may bleed to death from a small cut. The report does not indicate whether this material would prove effective when injected into the veins of a hemophilia sufferer.

The material was obtained from plasma, the fluid part of blood. Both the solid material and plasma from normal blood are effective in hastening clotting of hemophilic blood. They evidently contain some as yet unknown substance which clots blood and which is lacking or ineffective in the blood of hemophilia sufferers.

Efforts to identify this substance are now under way. Apparently, the Harvard scientists point out, it is associated with an already known blood constituent, prothrombin, or is a modification of prothrombin. Their studies indicate that it is not found in the blood platelets, minute bodies which have been considered important in connection with the blood clotting mechanism.

Science News Letter, October 3, 1936

PSYCHOLOGY

Brain Injury Makes Rats Less Variable in Choices

INJURY to the brain may actually be a help to an individual in performing some tasks, it was indicated by experiments reported to the Hanover, N. H., American Psychological Association meeting.

The individuals tested were only rats, and the task was to find a way through a maze, but the rats with injured brains were more successful because they naturally selected a monotonous unvarying pathway at the end of which lay their food. Normal animals prefer variations even when not always successful.

Among human beings a similar situation is seen when unintelligent persons are more efficient at monotonous routine tasks.

Although "lack of brains" may be an asset in a situation like this, it ordinarily would be a great hindrance to learning, said Dr. I. Krechevsky of the University of Chicago who reported the experiments.

Not only does such an injury decrease the variability of the animals—their ability to change their ways and adopt new courses of action—it also detracts from their ability to work out some general method of attack on a problem in the first place.

The extent to which division of labor takes place among different brain areas is indicated by the way in which monkeys recover from brain injuries in different locations. When the parts of the brain controlling movement are injured in the infant, the monkey can recover and learn to move about freely, Dr. C. J. Jacobsen of Yale University told the same meeting.

This recovery cannot take place in the adult monkey. Very different is the effect of injury to the frontal association areas believed to control thinking. Even the infant monkey fails to "come back" after such an injury.

Science News Letter, October 3, 1936

OCEANOGRAPHY

Record Deep Dive Claimed By Commercial Diver

DIVING experts of the U. S. Navy Department, while yet officially uninformed of the 510-foot descent of the well-known commercial diver, Roy Hansen, were keenly interested in the claimed record-breaking feat.

Hansen's descent, made in the deep, flooded quarry at Penargyl near Bangor, Pa., to rescue a boy from death, was possible through the use of an armored diving suit invented by Thomas P. Connoly of New York City. A check of Navy records showed no information on the detailed design of the Connoly diving suit used by Hansen.

Record descent with an armored suit in which actual work was done, said Navy officials, is the 410 feet attained by the Italian salvage company seeking the treasure aboard the sunken S.S. Egypt off the French coast.

However, they pointed out, inventors of armored type diving suits have claimed descents of 525 feet and more.

Navy record for the ordinary type of rubber suit is 306 feet made in Honolulu on the salvage of the submarine F-4 two decades ago. The British Admiralty has also claimed 345-foot dives in rubber suits.

King of all deep sea dives is, of course, the 3,028 foot descent of Dr. William Beebe on August 15, 1935, in the Barton bathysphere.

Dives useful for observational purposes and descents in which the diver performs actual labor are quite different things, point out the Navy's diving experts.

Even in the work on the S.S. Egypt with the armored suit, observation and instruction to the surface vessel was the main contribution of the equipment. The supposed flexible arms and legs on the Italian equipment were replaced, during operations, by a straight-walled container with the observing head structure superimposed. From within, the diver directed the placing of TNT charges about the *Egypt* and the direction of hooks and cables. The device served, in the main, as a pair of underwater eyes for the surface salvaging vessel.

Here is the way undersea descents look in tabulation:

Diving helmet	60 feet
Rubber diving suit	306 feet
Modern submarine (estimated)	360 feet
Armored suit (S.S. Egypt)	410 feet
Roy Hansen armored suit (claimed)	510 feet
German armored suit (claimed)	525 feet
Barton bathysphere	3,028 feet

Science News Letter, October 3, 1936

PALEONTOLOGY

30,000,000-Year-Old Drought

Distress of the Past Summer Is Not Confined to Our Own Land or Time, as Witnessed by Fossil Remains

By DR. FRANK THONE

DROUGHT in the West, this year and for several years past, has been desperately hard on the beasts of the field. The poor animals stumble through dusty miles where there is no food or water; they fall exhausted and cannot rise, and the buzzards and coyotes feast on their carcasses and leave their white bones as their only monuments.

If they do find a stream, or a pond with a little muddy water still in it, some of them are saved for a while at least, but for others even the promise of rescue is only another door of death. In their eagerness to drink, they rush in beyond their depth, or are bogged in the bottom mud, or slip into a sudden deep place. Their bones find muddy sepulture—perhaps to be joined by the skeletons of the frogs and fish around them, if the drought goes on to the bitter end and the pond dries up entirely.

But this is not unique to our own land or our own time. Droughty death is no new thing under the sun. "The thing that hath been, it is that which shall be; and that which is done is that which shall be done. . . . It hath already been of old time," saith The Preacher.

Of old time indeed have been droughts that filled the last water-holes of a despairing land with bones. Thirty million years ago, in the time called eocene, when mammalian life was still an almost new thing under the sun, there were terrible droughts in the land that is now the fertile heart of Germany. Thousands upon thousands of fossils, found in twelve great pits in what is now a giant mine of lignite or brown coal, bear eloquent witness.

Cecilie

Lignite, mostly a neglected resource in the United States, has long been an important fuel in Germany. Pressed into briquets, it is used extensively for both domestic and industrial purposes. Lignite mines are sometimes tremendous affairs, employing many hundreds of workmen in their vast open pits.

Such a one is the lignite mine called by the oddly romantic name Cecilie, in the Geisel valley, not far from the ancient city of Halle. The lignite deposit there is of a really astounding depth, ranging from 150 to almost 300 feet, so that the wall of the cutting is a veritable artificial cliff.

Bones of extinct animals, and other remains of ancient life, are not common in lignite mines elsewhere in the world, for the humic acids generated by the matted vegetation that formed the lignite slowly ate them away. But in the Geiseltal deposits, inflowing alkaline waters protected them from this action, while ever-renewed deposits of leaves and stems and detritus from above buried them beyond the reach of bacteria and the action of the weather. So it was at first with surprise and then with delight that scientists beheld the uncovering of great masses of buried bones, teeth, and horns of large animals, and even such delicate things as hair, insect wings, and plant leaves.

Such scientific treasure-trove could never be left to the blind destructiveness of steam-shovels and bucket-dredges—especially not in a land like Germany where science has always been a sort of second religion. At the Martin Luther Museum in Halle there is a well-organized Geological-Paleontological Institute, under the direction of Prof. Dr. Johannes Weigelt. As soon as the fossils began to come to light, Prof. Weigelt and his colleagues were all over the place, systematically salvaging every useful scrap of this scientific hoard of the ages.

Older Than La Brea

It proved to be a find such as has not been made since the discovery of Ice Age fossils in the great La Brea asphalt pits in California, and in many ways it is completely unique among fossil mines. Geologically far older than the La Brea deposits, the Cecilie finds represent a totally different fauna—most of them animals that no longer exist anywhere in the world. Another unique feature is the presence of so many small and delicate things, that are totally lacking in almost all other fossil deposits: bats' bones, feathers, the remains of the animals' last meals, even brains and nervous systems preserved by geologically miraculous accidents of nat-

EXCAVATING

Scientists at work seeking fossils in the face of a tremendously deep bed of lignite, exposed in a great open-pit mine.

RARE

Prize piece of the whole collection: skeleton of Ceciliolemur, an exceedingly primitive relative of the monkeys, about the size of a squirrel.

ural chemistry. The museum treasure-shelves already contain enough to keep scientists happily busy for decades—and the end of new discovery is not in sight.

The barest catalog of the finds is impressive. Remains of some 7,000 vertebrate animals alone include 1,600 fish skeletons, 300 amphibians, 300 turtles, 250 frogs, 200 lizards, 100 snakes, 60 crocodiles, 100 tapir-like creatures called *Lophiodon,* 120 extinct horses representing four distinct species, 25 primitive pigs, 100 bats, and 1,000 small mammals of various types.

Many Teeth

Besides these there are about 2,000 separate teeth, and some 1,000 insects. The latter are mostly beetles, whose splendid gold-shining colors are still preserved. It has even been possible to make chemical analyses of some of the plant and animal remains, and to trace microscopic details of individual cells in some of the specimens.

Perhaps the outstanding zoological prize of this whole perished Noah's arkful of pioneer animals is a little skeleton not much bigger than a squirrel's. This is a very early representative of a lemur, related to the monkeys and apes but much more primitive. Living representatives of this "half-monkey" tribe are now found only in the Old-World tropics, where they are much feared by the natives as "ghosts of ancestors." In a way, the brown-skinned savages are more nearly right than they suspect, for these little creatures are to the monkeys as the monkeys are to us, in the evolutionary scheme of things.

This fossil lemur represents an entirely new genus, and so entitled Prof. Weigelt to the honor of naming it. With a nice sense of the appropriate, he incorporated the name of the place where the find was made, and called the animal *Ceciliolemur.* By this name will all other fossils like it be known, if by good fortune other specimens are found, whether in the Geiseltal or elsewhere.

It was no easy task to get out the specimens as they were discovered. The bones, which are usually the hardest and most easily handled of fossil remains—indeed as a rule the only fossils found—were here so soft and crumbly when they were exposed to the air that special treatment was required, to hold them together as they were lifted out of the surrounding lignite and prepared for transportation to the museum. This was done by impregnating them with a cellulose plastic, so that as they lie on the museum shelves the specimens are partly as ancient as the brown-coal beds themselves, partly as modern as the lacquer on your car.

Great Risk

The difficulties were not all in the matter of delicate handling, either. Partly they involved very hard labor and a good deal of physical risk. For some of the deposits were at the very bottom of the pit, under permanent standing water, so that electric pumps had to be put to work and the scientists bent over their labors with the threat of drowning held at bay by these big weapons of modern mining engineering. Again, some of the deposits were uncovered high up the sides of the cut, so that the scientists had to work on an uneasy scaffold a hundred feet up in the air. In every case, however, they "brought home the bones."

The nature of both animal and plant remains gives strong evidence that this part of Germany, which now has a climate much like that of Ohio or Kentucky, was very much like the lowland

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By Lucia C. Harrison

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Gulf Coast of the United States those thirty million years ago.

Wet and Dry

With this notable exception, however: that whereas our Gulf Coast now has a pretty steadily moist climate, the ancient Geiseltal and all the region round about alternated between wet seasons and dry. During the rainy season, vegetation flourished and the animal population throve accordingly. But when the parching droughts came, animals had a harder time of it. It was then that they crowded upon the water-holes as they do in our own West to this very year of dry distress 1936. Then, as now, they sometimes fell into the water they were drinking, and being too weak to struggle out again, drowned and left their bones to testify to their tragic end.

Another kind of water-trap awaited the beasts of the ancient Geiseltal, that is not so widely found in our present West, though the same kind of thing is abundant in the Gulf Coast region, especially in the northern part of the Florida peninsula. These were sink-holes, round, steep-sided, funnel-like cave-ins, where the thin crust of the earth has broken through the roof of a limestone cavern underneath. In present-day Florida these are often filled with water the year round, and in them alligators live, lurking for prey that ventures or accidentally falls down the steep sides. So was it also in the Geiseltal, for in these filled-up sink-holes one finds crocodile skeletons added to the bones of other victims.

Kinships

These resemblances in topography are not the only links between this part of Germany thirty million years ago and the America of today. Prof. Weigelt points out numerous kinships between his animals and those of like age on this continent. Up until a short time before the days of the Geiseltal fauna, he says, a land bridge existed between Europe and North America, so it is only natural that this should be so.

The stage for the tragical dramas of the drought, as they were played out so long ago in the Geiseltal, was set by droughts perhaps even more severe, and very long before even the Geiseltal was formed. For the whole terrain is underlain with beds of salt and gypsum, and these minerals are formed only when landlocked seas are slowly evaporated down to nothing or near that, as is happening in the Caspian Sea basin today.

On top of the salt and gypsum strata other layers of less soluble material were piled, becoming in time solid rock. This formed the crust, the foundation of the early Geisel valley. But water, seeping through the soluble minerals beneath, formed cavities, and the crust gradually sank, deepening the valley and permitting the formation of lakes and bogs. These filled with vegetation, and as the valley continued to sink, the bogs continued to build themselves up, developing the enormously thick deposits that are now the lignite beds.

The valley bottom did not all sink at once, or at a uniform rate. Faster solution of the salt and gypsum beneath made "soft spots" here and there, and these collapsed under the weight of the overlying material, forming the crater-like sink-holes.

How many thousands of years this process went on there is no way now of telling exactly; though it is legitimate to guess that it was tens or hundreds of thousands of years a-doing. And all this time the interplay of abundance and drought, of life and death, went on in the valley, focusing with special intensity around the little lakes and the sink-holes. And the story of this long development is now being taken out of the Cecilie lignite mine by the patient fingers of the German scientists, and you can see it all in the aisles of the Museum of the University in Halle.

Science News Letter, October 3, 1936

INVENTION

Thomas Edison to Speak at 100th Anniversary of Patents

THOMAS EDISON'S voice will speak to dinner guests at the celebration, in Washington, D. C., of the 100th anniversary of the American Patent System on November 23.

Leading inventors, patent attorneys, industrial leaders and government officials will participate in the celebration, it is announced by Dr. Charles F. Kettering, president of the General Motors Research Corporation, in accepting the invitation of the Secretary of Commerce, Daniel C. Roper, to serve as chairman of the National Committee being formed to celebrate the event.

The tentative program calls for addresses in the morning of the Centennial Celebration day at Washington reviewing the progress made in the last century under the present Patent System and the significance of the law on the growth of the United States. The present value of the system to raise the American standard of living will be discussed and the continued growth of the inventive arts in the future forecast.

In the afternoon new "invention babies"—industrial developments just ready to take their place in economic usefulness—will be shown in a series of demonstrations.

Climax of the Centennial day will be a large dinner at the Mayflower Hotel in Washington when special novelties of interest to all inventors will be on the program. Transmission of the original Morse telegraph message will be reenacted between the old Baltimore and Ohio station in Baltimore to the dinner hall, where it will be received on one of the two original Morse instruments loaned by Cornell University. The late Thomas A. Edison will also address the dinner guests in his own words from one of his early phonograph recordings.

Science News Letter, October 3, 1936

BIOCHEMISTRY

Enzymes Can Be Formed From Inactive Proteins

ENZYMES, the highly complex proteins that make digestion, breathing, body warmth and many other physiological processes possible, can be formed out of inactive proteins by suitable chemical manipulation and heating, Dr. J. H. Northrop, of the Rockefeller Institute for Medical Research, reported to the Harvard Tercentenary. He described a number of experiments where such enzymes had been "manufactured," including one in which the material generated was an enzyme isolated from the still-mysterious germ-destroying bacteriophage.

Science News Letter, October 3, 1936

● RADIO

October 6, 3:15 p.m., E.S.T.

POWER FROM THE SUN—Dr. C. G. Abbot, Secretary of the Smithsonian Institution.

October 13, 3:15 p.m., E.S.T.

SOIL AND SOCIOLOGY—Prof. Paul B. Sears of the University of Oklahoma.

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From Page 215

other compounds thus far unidentified. This formation of acetaldehyde from a simple organic peroxide is of physiological interest as is the entire reaction inasmuch as all attempts to demonstrate the presence of hydrogen peroxide, supposed to be the substrate for catalase, have failed. The fact that a substituted organic peroxide may serve as a substrate for this enzyme which is sufficiently concentrated in the liver of mammals to bring about such a catalysis, opens a new approach to the problem.

Dr. Stern placed the enzyme in a spectroscope and found that its spectrum disappears upon adding the peroxide, and a new spectrum is formed. This was the spectrum due to the chemical combination between the two substances. Simultaneously with the destruction of the peroxide, the spectrum of the free enzyme reappeared. It was thus possible for the first time to observe directly the entire cycle of an enzymatic process.

Dr. Stern's study shows the enzyme working as follows:

The enzyme operates by providing a new path of reaction which leads over an intermediate compound composed of the enzyme and substrate molecules. This compound is unstable but has a mean span of life sufficient to allow for direct observation.

The knowledge of the exact cause of the combination between the enzyme and the substance to be decomposed might provide insight into the finer mechanism of enzyme action. For that purpose Dr. Stern has recently developed a method which permits the photographic recording of such reactions. By the use of a photo-electric cell and a radio tube, the rapid reactions between a catalyst and its substrate are indicated on a photographic film. This photo-electric method permits the recording of chemical reactions which are too fast to be followed by the human eye.

Science News Letter, October 3, 1936

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GEOLOGY

Museums Sometimes Fooled By False Meteorites

SOME chunks of iron and stone, even if they are neatly labeled "meteorite" and in a museum, did not come from the sky. The Society for Research on Meteorites received a communication from John Davis Buddhue of Pasadena, Calif., telling of studies upon ordinary earthly rocks or accidental masses of metal that have acquired places in museums and remained undetected for years. One Chinese "meteorite" is really a block of limestone. A Scotch one came from an iron furnace and one found in Baluchistan is really only a mass of fused ash from a burning haystack. There are other supposed meteorites, however, that have the scientists puzzled.

Science News Letter, October 3, 1936

One-fourth of the babies prematurely born in United States hospitals die before leaving the hospital.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF MARCH 3, 1933

Of SCIENCE NEWS LETTER published weekly at Washington, D. C., for Oct. 1, 1936

Washington } ss.
District of Columbia }

Before me, a Notary Public in and for the District of Columbia aforesaid, personally appeared Watson Davis, who, having been duly sworn according to law, deposes and says that he is the Editor of the SCIENCE NEWS LETTER and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Editor, Watson Davis, 2101 Constitution Ave., Washington, D. C.

2. That the owner is:

Science Service, Inc., 2101 Constitution Ave., Washington, D. C., a non-profit corporation without stock, operating as the Institution for the Popularization of Science.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

Watson Davis,
Editor

Sworn to and subscribed before me this 24th day of September, 1936.

[SEAL]

Charles L. Wade

(My commission expires March 26, 1938.)

Let a nation-wide consumer organization advise you

Which Brands of SHOES and TIRES are "Best Buys"

EQUAL IN COST—UNEQUAL IN QUALITY

Brand X shoes cost $5.55 a pair. Brand Y, $5.50. Both are nationally advertised, widely sold. Almost exactly equal in cost, a typical Consumers Union test (reported in the current issue of *Consumers Union Reports*) shows that they are far from being equal in quality. Brand Y is rated as one of the two "Best Buys" of thirteen brands of men's shoes subjected to extensive laboratory tests—Brand X is one of the five brands listed as "Not Acceptable." (For partial details of this test see table at the right.) Read this report for accurate, technical information about shoes—it also rates, *in terms of brand names*, ten leading brands of women's shoes. Included in this report are Florsheim, Thom McAn, I. Miller, A. S. Beck, Walk-Over, and Regal.

A TYPICAL CONSUMERS UNION TEST

Results of 4 out of 19 laboratory tests made on the shoes mentioned at the left

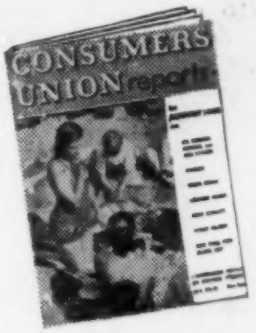
	Brand X	*Brand Y*
Number of abrasive strokes on test machines required to wear out equal thicknesses of soles	32,169	43,171
Number of pounds per inch required to tear or pull apart inner sole	284	638
Number of pounds required to burst outer vamp lining	261	319
Number of pounds per inch required to tear or pull apart vamp leather	103	131
Total rating on all of 19 points	694	854

SAVING FROM $40 TO $100 ON TIRES

Whether you equip your car with one brand of tires or with another may mean an actual difference in cost to you of from forty to a hundred dollars in each 25,000 driving miles. A report in this issue, based on actual road tests of over 300 tires, shows striking differences in mileage costs of leading brands in the same price range. The tires of one brand for example, selling for approximately $8.50, lasted an average of 27,051 miles in this test—another brand selling at $10 lasted only 13,550 miles. Twelve brands, including Firestone, Goodyear, U. S., Dunlop, Federal and Goodrich, are rated in this report—three as "Best Buys," six as "Also Acceptable" and three as "Not Acceptable."

COMING!—RATINGS OF ELECTRIC RAZORS

Do electric shavers give as close or as good a shave as ordinary safety razors? Are they faster or slower? Will they cut or irritate the skin? Of three electric shavers, including two nationally advertised makes, only one is rated in the coming issue of *Consumers Union Reports* as a "Best Buy"—the others as "Not Acceptable." Ratings will also be given in this issue of leading brands of men's shirts, men's socks, canned peas and canned apricots, and other products. Later issues will rate ordinary safety razors, razor blades, canned fruits and vegetables, electric irons, drugs, cosmetics and many other products. The labor conditions under which many of the products are made will also be described.



If You Missed

our first issues there is still time to get them. Simply write on the coupon with which issue you wish your membership to begin. You will immediately receive the issues dating from the month indicated and will receive future issues as they appear PLUS the yearly buying guide. Below is a brief summary of the principal subjects covered in each issue.

MAY, 1936 (full service edition)—Inexpensive hosiery, Grade A and Grade B milk, toilet soaps, breakfast cereals, Alka-Seltzer, toothbrushes.

JUNE, 1936 (full service edition)—Automobiles, gasolines, moth preventives, canned vegetable soups, vegetable seeds.

JULY, 1936 (full service edition)—Mechanical refrigerators, used cars, motor oils, sunburn preventives, bathing suits.

AUG., 1936 (full service edition)—Oil burners, coal stokers, gas boilers, medium-priced hosiery, white breads, laundry soaps, black list of dangerous drugs and cosmetics.

Consumers Union of U.S.

Consumers Union of United States, headed by Professor Colston E. Warne, of Amherst, and Arthur Kallet, co-author of *100,000,000 Guinea Pigs,* now supplies 12,000 members (the number increasing at the rate of over 2,000 a month) with these valuable ratings of competing brands of products. If you, too, want this accurate and *unbiased* technical information — enabling you to save money and to buy most intelligently—simply fill out and mail the coupon at the right. You will immediately receive the current issue. Membership will also entitle you to receive the yearly buying guide to be published late in the year. (Note—the limited $1 edition reports mainly on low-priced products and does not cover higher-priced commodities such as automobiles, refrigerators, etc. The full $3 service covers both types of products.)

MAIL THIS APPLICATION TODAY!

To: **CONSUMERS UNION of U.S., Inc. 22 East 17th St., NEW YORK, N. Y.**

I hereby apply for membership in Consumers Union. I enclose:

- ☐ **$3 for one year's membership, $2.50 of which is for a year's subscription to the complete edition of *Consumers Union Reports.* (Subscriptions to non-members, $3.50.)**
- ☐ **$1 for one year's membership, $.50 of which is for a year's subscription to the limited edition of *Consumers Union Reports.* (Note—the tire report is not in this edition.)**
- ☐ **I also enclose.....($2 to $25) as a contribution toward a permanent consumers' laboratory.**

I agree to keep confidential all material sent to me which is so designated.

Signature.....

Address.....**Occupation**.....

City and State.....135

•First Glances at New Books

Mammalogy—Ecology

THE MAMMALS AND LIFE ZONES OF OREGON—Vernon Bailey—*Govt. Print. Off.*, 416 p., 75c. A thorough-going study of the mammalian life in a region hitherto not well covered from the zoological point of view. Mr. Bailey is of course eminently qualified to speak with authority on both the systematics and the distribution of mammals, particularly the mammals of the West.

Science News Letter, October 3, 1936

Electricity

AN ABSOLUTE DETERMINATION OF THE OHM—Harvey L. Curtis, Charles Moon, and C. Matilda Sparks—*Govt. Print. Off.*, 82 p., 25c. Because the ohm is one of the fundamental electrical units, its determination with an error of less than 20 parts in a million is a major scientific research. A history of less accurate determinations in the past and an extensive review of the present experimental procedure are here given with pictures showing the equipment used.

Science News Letter, October 3, 1936

Medicine

ANNUAL REPORT, 1935—*Rockefeller Foundation*, 479 p., free upon direct application to Rockefeller Foundation, 49 West 49th St., New York. Activities of the Foundation for the year 1935, briefly summarized in this report, ranged from research on malaria and yellow fever to support for a library of motion picture films.

Science News Letter, October 3, 1936

Chemistry

DESCRIPTIVE CHEMISTRY—Sherman R. Wilson—*Holt*, 312 p., $1.20. A high school text, designed for use in a one-semester lecture demonstration course, which is also valuable as an elective cultural course. There are no equations to be balanced, no valences or formulas to be taught. As the author says, "The teacher is free. What an opportunity this affords!"

Science News Letter, October 3, 1936

Public Health

REGULATORY MEASURES CONCERNING THE PROHIBITION OF THE COMMON DRINKING CUP AND THE STERILIZATION OF EATING AND DRINKING UTENSILS IN PUBLIC PLACES—Comp. by David Fromson—*Public Health Committee of the Cup and Container Institute*, 126 p. Free to health officers, teachers, etc., upon direct application to the Public Health Comm. of the Cup and Container Institute, 30 Rockefeller Plaza, New York City. Inadequacy and impracticability of some of the many laws and regulations aimed at eliminating the danger of diseases being spread by eating and drinking utensils appears in this summary, which should prove interesting and helpful to those engaged in guarding the public health.

Science News Letter, October 3, 1936

Etymology

PHRASE ORIGINS—Alfred H. Holt—*Crowell*, 328 p., $2. An alphabetical list of many of the curious and colorful expressions that crowd our everyday speech, with such historical information or explanation as is available.

Science News Letter, October 3, 1936

Prophecy

THE STORY OF PROPHECY—Henry James Forman—*Farrar & Rinehart*, 347 p., $3. Those who do not believe the notion that prophecies may have foundation in some occult conception such as telepathy or clairvoyance may still find interest in this compilation of famous prophecies.

Science News Letter, October 3, 1936

Engineering

MODERN HEATING—Harold L. Alt—*Domestic Engineering Company*, 219 p., $1. A practical handbook covering all aspects from chimneys to estimating and cost records.

Science News Letter, October 3, 1936

Psychology

HOW TO USE PSYCHOLOGY IN BUSINESS—Donald A. Laird—*McGraw-Hill*, 378 p., $4. A readable book evidently intended as reading for the business man, not as a text for the psychology student.

Science News Letter, October 3, 1936

Chemistry

THE CHEMISTS' YEAR BOOK, 1936—Ed. by E. Hope—*Chemical Publishing Co. of N. Y.*, 1257 p., $6.

Science News Letter, October 3, 1936

Industrial Hygiene

INDUSTRIAL DUST—Philip Drinker and Theodore Hatch—*McGraw-Hill*, 316 p., $4. This is a technical book, written by two Harvard School of Public Health authorities, and designed for industrial physicians and engineers faced with the responsibility of protecting men from the hazards of dusty occupations.

Science News Letter, October 3, 1936

Criminology

SING SING CRIMINALS—Samuel Kahn—*Dorrance & Co.*, 187 p., $2.50. A book on criminology by one who has held the position of psychiatrist at the famous New York prison.

Science News Letter, October 3, 1936

Astronomy

THE YEAR ROUND WITH THE STARS—L. L. Doolittle—*Published by author, P. O. Box 341, So. Norwalk, Conn.*, 45 p., 12 star charts, 75c.; 10 or more to one address, 60c.; Libraries, 60c. Description of the planets throughout the year for the beginner astronomer.

Science News Letter, October 3, 1936

English

BASIC ENGLISH GRAMMAR—G. David Houston—*Globe*, 200 p., $1.32. A book intended for the self-instruction of high school and college students. It is written by the principal of a Washington, D. C., high school.

Science News Letter, October 3, 1936

Medicine

HEART DISEASE AND TUBERCULOSIS—S. Adolphus Knopf—*Livingston Press*, 108 p., $1.25. A monograph intended to acquaint physicians with the author's use of "diaphragmatic respiration as a preventive and curative agent in pulmonary tuberculosis."

Science News Letter, October 3, 1936

Educational Psychology

EDUCATIONAL PSYCHOLOGY—Ed. by Charles E. Skinner—*Prentice-Hall*, 754 p., $3.20. An elementary text, the chapters of which are written by recognized authorities in their respective fields.

Science News Letter, October 3, 1936

Science News Letter will secure for its subscribers any book or magazine in print which was published in the United States. Send check or money order to cover regular retail price ($5 if price is unknown, change to be remitted) and we will pay postage in the U. S. When publications are free, send 10c. for handling. Address Book Dept., Science News Letter, 2101 Constitution Avenue, Washington, D. C.